

## REMARKS

Claims 1-18 are pending in the present Application. With entry of this Amendment, claims 14-18 are canceled and claim 19 is added.

Claims 1 and 11 have been amended to more clearly define the sacrificial material as a polymer comprising as polymerized units a multi-ethylenically unsaturated monomer. Support for this amendment is found in the Specification at page 9, line 26 to page 11, line 9. Newly added claim 19 is supported by the Specification at page 11, lines 12-14 and 17-22, and by the Examples. No new matter is added with this Amendment.

Applicants and their attorney thank Examiner Chen for taking the time to discuss the Official Action during a telephonic interview with Dr. Michael Gallagher and the undersigned on October 6, 2005. The prior art and the pending claims were discussed but no agreement was reached.

The drawings have been objected to for omitting reference numerals 25 and 45. Replacement sheets of drawings are provided herewith clearly indicating reference numeral 25 in Figs. 1C and 1D and reference numeral 45 in Figs. 2C and 2D. These are fully supported by the Specification at page 21, second and third paragraphs. Applicants respectfully request that this objection be withdrawn.

Claims 1-13 have been rejected under 35 USC § 103(a) as being unpatentable over Besling et al. (US 6,562,732) in view of Odian (pg. 18 of *Principles of Polymerization*, 1981, 2<sup>nd</sup> edition). In particular, the official action states Odian teaches that polymers may be linear, branched or cross-linked, and hence, the use of cross-linked polymers would be obvious. Applicants traverse this rejection for at least the following reasons.

Cross-linked polymers have different properties from other polymers, such as linear polymers. In particular, cross-linked polymers have excellent *stability toward elevated temperatures* and physical stress, and they are dimensionally *stable* under a wide variety of conditions due to their structure. See, Odian, *Principles of Polymerization*, 3<sup>rd</sup> edition, pg. 109 (1991), copy enclosed.

The Bresling patent only discloses linear polymers. See column 4, lines 3-4, which only disclose polymethyl methacrylate, polystyrene and polyvinyl alcohol. No other polymers are taught or suggested in this patent. Further, Bresling et al. make clear that the air gap forming polymer is removed by heating. See column 4, lines 24-29. Since the air gap forming polymer of Bresling et al. is removed by thermal degradation (col. 4, lines 27-29), this patent clearly does not suggest the use polymers that are *more thermally stable*. Simply put, there is nothing in this patent that teaches or suggests the use of a cross-linked polymer in a method of forming air gaps. Using more thermally stable polymers, such as cross-linked polymers, is contrary to the teachings of Bresling.

Odian teaches that cross-linked polymers are *more thermally stable*, as discussed above. There is nothing in Odian or Bresling, alone or in combination, that would lead one skilled in the art to use a more thermally stable class of polymers (i.e., cross-linked polymers) in the application of Bresling where such polymers need to be removed by thermal degradation. In fact, Odian clearly teaches that cross-linked polymers have very different characteristics than other types of polymers, such as linear polymers. One skilled in the art reading Odian would not be lead to use a cross-linked polymer in an application where linear polymers are used for their readily thermally degradable nature. In short, there is no motivation in Odian to replace a linear polymer with a cross-linked polymer in an application where the polymer needs to be degraded thermally.

Applicants submit that the Official Action does not make out a *prima facie* case of obviousness and respectfully request that this rejection be withdrawn.

Claims 1-13 have been rejected under 35 USC § 103(a) as being unpatentable over Babich et al. (US 6,815,329) in view of Odian (pg. 18 of *Principles of Polymerization*, 1981, 2<sup>nd</sup> edition). In particular, the official action states Odian teaches that polymers may be linear, branched or cross-linked, and hence, the use of cross-linked polymers would be obvious. Applicants traverse this rejection for at least the following reasons.

In the Babich patent, polymers used as the sacrificial material are linear polymers. See column 8, line 57 to column 9, line 8. The particular polymers disclosed in this patent are norbornene polymers, polymethyl methacrylate, polystyrene, polycaprolactone, and

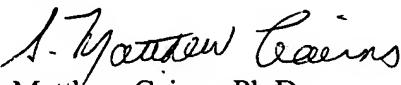
polyacrylamide. Other suitable materials for use as sacrificial materials are described in this patent as "low thermal stability versions" of various materials. See column 8, last line, and column 9, line 3. Throughout this patent, the sacrificial material is often referred to as "low thermal stability" material. One skilled in the art reading Babich et al. would be lead to a sacrificial material that had low thermal stability, i.e. it was thermally removable or degradable. A necessary criteria in Babich is that the sacrificial material be removable.

Odian is discussed above. There is nothing in either reference, alone or in combination, that would lead one skilled in the art to Applicants' claimed invention. Odian clearly teaches the increased thermal stability of cross-linked polymers as well as their stability toward physical stress and dimensional changes. Certainly, one skilled in the art reading Odian would not be motivated to use a polymer having such stable properties as a sacrificial material where such sacrificial material needs to be removed. One would simply use a less stable material to begin with, such as the linear polymers disclosed in Babich et al. Even if one skilled in the art tried a cross-linked polymer after reading Odian, given the requirement in Babich that the sacrificial material be readily removable (preferably thermally degradable), there is no expectation that the use of a more thermally and dimensionally stable material (i.e. a cross-linked polymer) would work in the method of Babich.

Applicants submit that the Official Action has not made out a *prima facie* case of obviousness and respectfully request that this rejection be withdrawn.

Favorable consideration in the form of a notice of allowance is respectfully request.

Respectfully submitted,

  
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### **Amendments to the Drawings**

The attached sheets of drawings include changes to Figs 1C, 1D, 2C and 2C. In Figs. 1C and 1D, the previously omitted reference numeral 25 has been added. In Figs. 2C and 2D, the previously omitted reference numeral 45 has been added. These sheets replace the original sheets including Figs. 1A-1D and 2A-2D.

Attachments: Replacement sheets and annotated sheets



Annotated Sheet

Fig. 1A

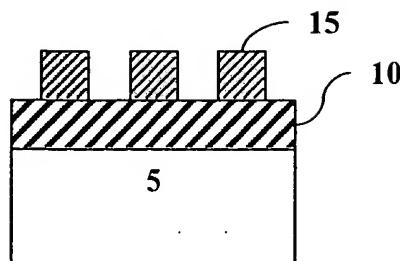


Fig. 1B

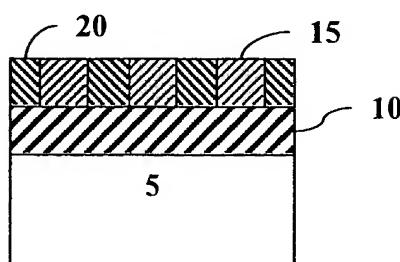


Fig. 1C

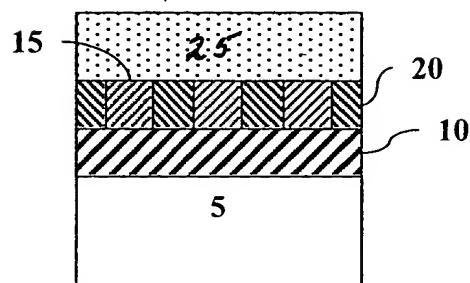
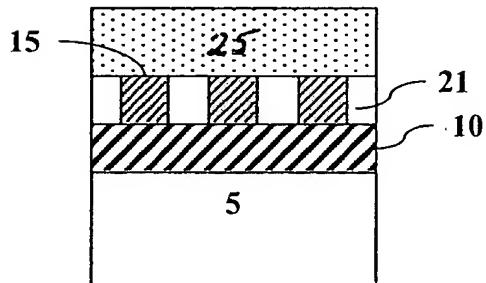


Fig. 1D



**Annotated Sheet**

